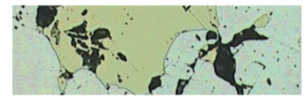


**Scotia Capital Conference**  
**Toronto, January 12<sup>th</sup> 2010**

**Copper: Physical Market Realities and the  
Unexpectedly High Price**

By Paul Dewison of  
Bloomsbury Minerals Economics Ltd.

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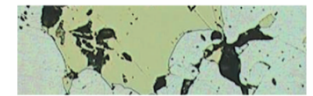
## Summary

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- **2009 in retrospect: The expected and the unexpected**
  - Economic downturn in 2008, fall in copper use through 2009
  - Early retreat of hedge funds, then growth in long only investment
  - Supply response not enough to balance the market, growing stocks
  - Prices on a strong upward trend since April
- **Prospects for the physical market and prices in 2010 and beyond**
  - Real recovery in copper use starting, and will accelerate
  - With quite low output growth, market moving towards balance
  - High prices set to continue so long as long-only investment holds
  - With high prices, stock overhang likely to remain, in a context of modest copper use and output growth
- **Implications looking forward**
  - Copper should remain a profitable business
  - But price is not necessarily a signal for expansion

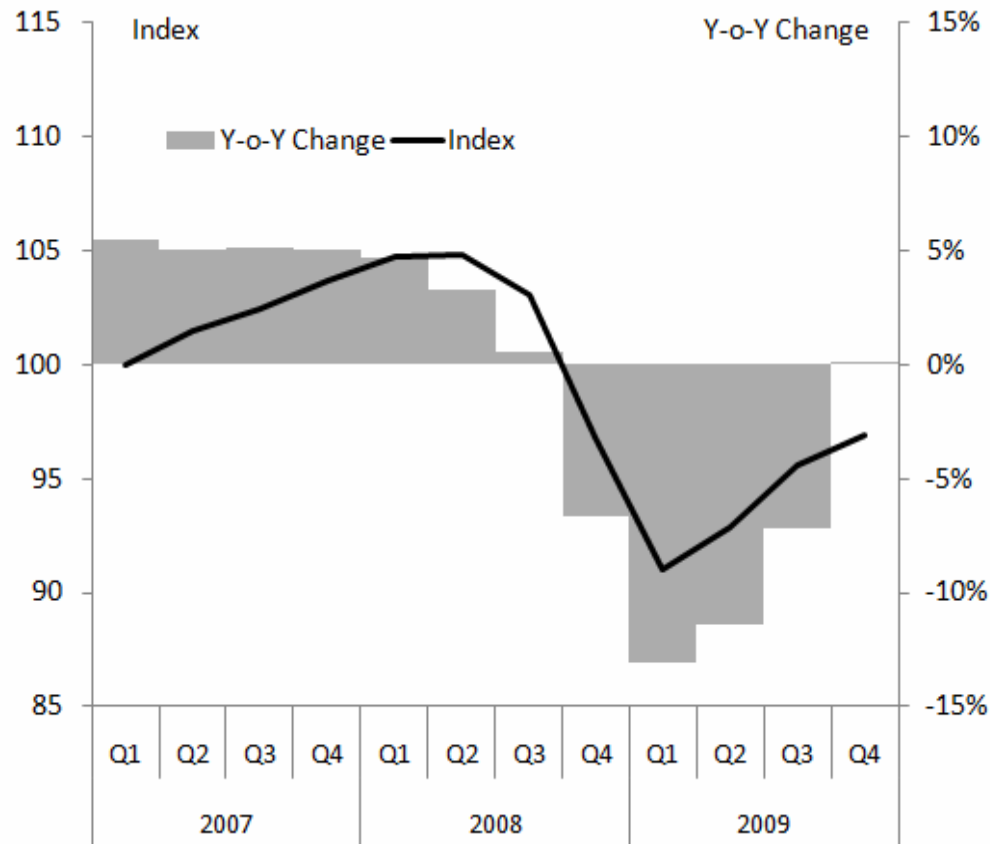


# 2009 in Retrospect: The Expected and the Unexpected



## 2009 in retrospect: *The Economy*

### The economic downturn and partial recovery



Global Industrial Production fell below that in the previous year from September 2008, then tumbled sharply. Both year-on-year comparisons and absolute IP bottomed February-April 2009.

Year-on-year comparisons are showing a marked improvement, but this is against a weakening 2008. In absolute terms, the global economy is crawling only slowly out of recession.

Non OECD performance is hugely better than the OECD, mainly due to very strong performance in China.

Source: CHR



## 2009 in retrospect: *Consumption*

### Fabricated Product Output in 2009 – Actual and Expected

	Actual Performance	Jan-09 Base Case	Jan-09 Worst Case
<b>Infrastructure</b>			
Telecom	6.6%	5.9%	5.9%
Power			
Other			
<b>Building Construction</b>			
Commercial & Industrial	-7.2%	-7.7%	-12.8%
Residential			
<b>OEM &amp; General</b>			
Transport			
Industrial Equipment	-8.6%	-8.0%	-11.2%
Other Equipment			
General Market			
<b>Total</b>	<b>-5.7%</b>	<b>-5.7%</b>	<b>-9.1%</b>

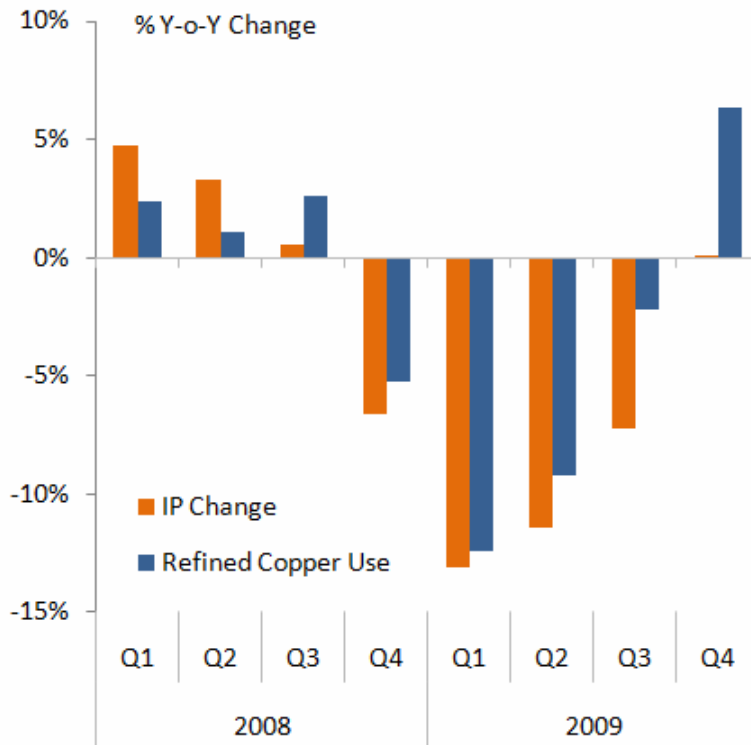
As forecast last January in our Base Case, fabricated product output in 2009 was down by 5.7% year-on-year. With high prices, the substitution of scrap by cathode was less than we expected so our refined copper consumption forecast (-4.6%) was lower than that predicted (-4.1%)



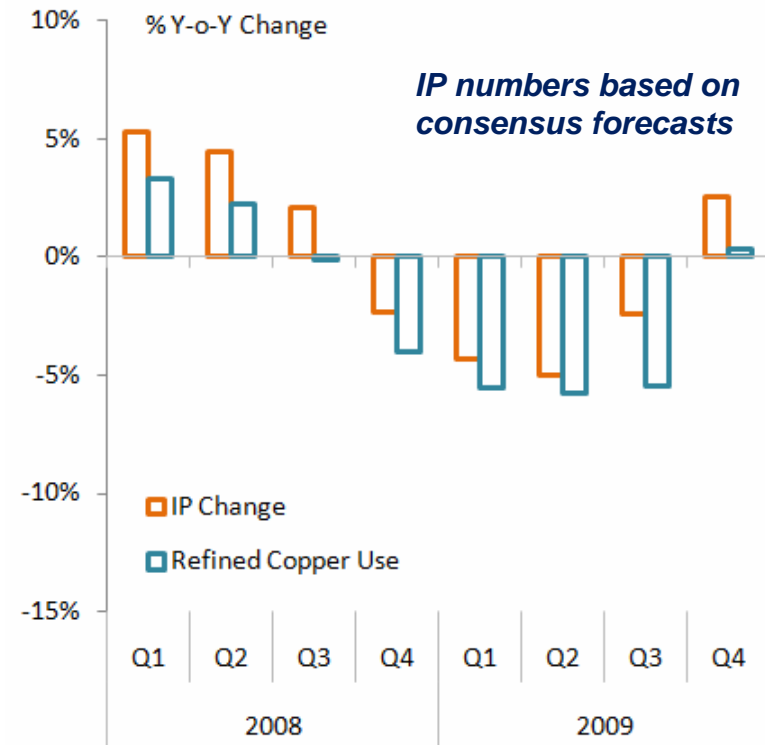
## 2009 in retrospect: *The economy and consumption*

H1 2009 trough deeper than expected, recovery sooner

**Actual Performance**



**Expectation Jan 09**



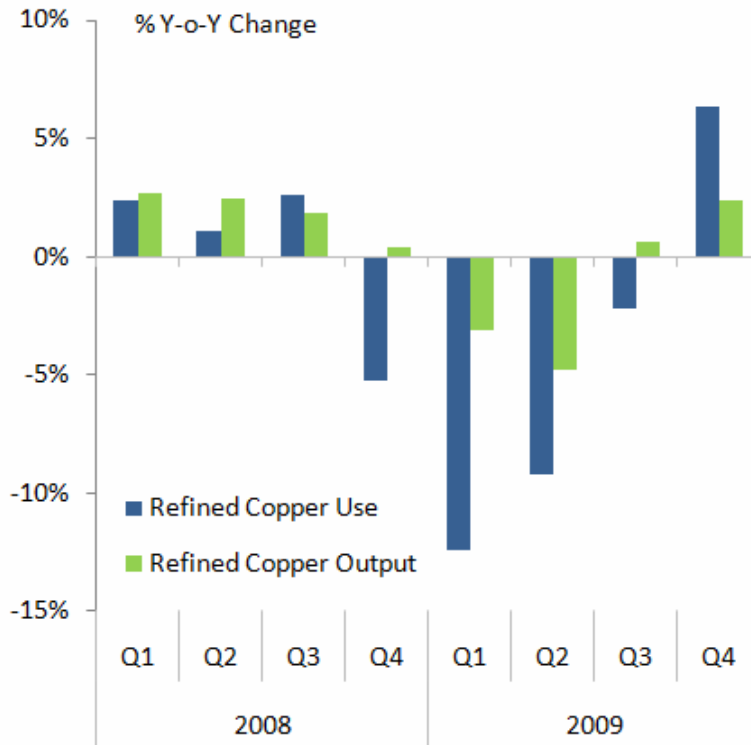
Consensus economic forecasts were too optimistic in Jan-09. We correctly saw this, and forecast copper use accordingly. While we were close to correct for consumption in 2009 overall, we still under-estimated the trough depth



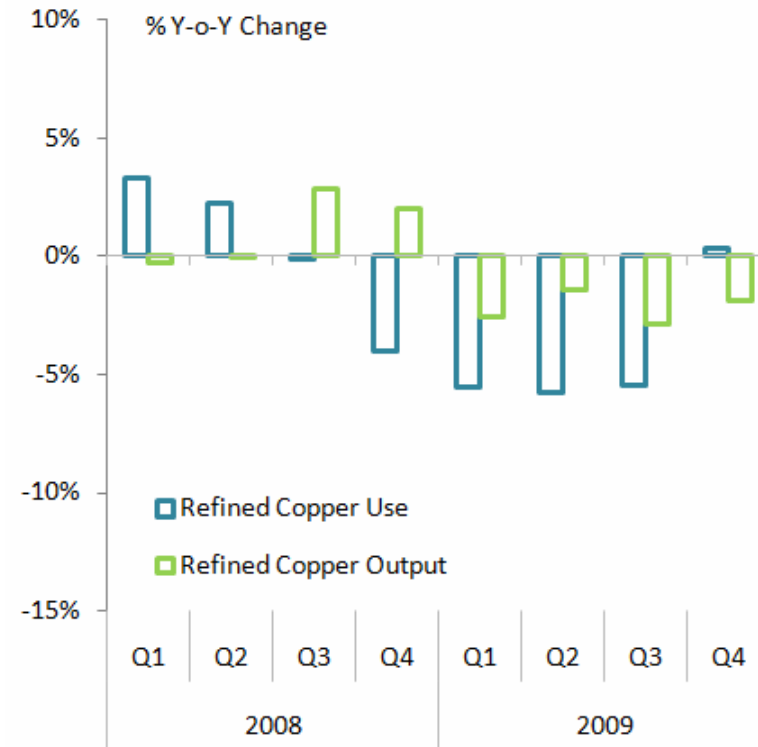
## 2009 in retrospect: *Supply*

### Production cutbacks much as expected

**Actual Performance**



**Expectation Jan 09**



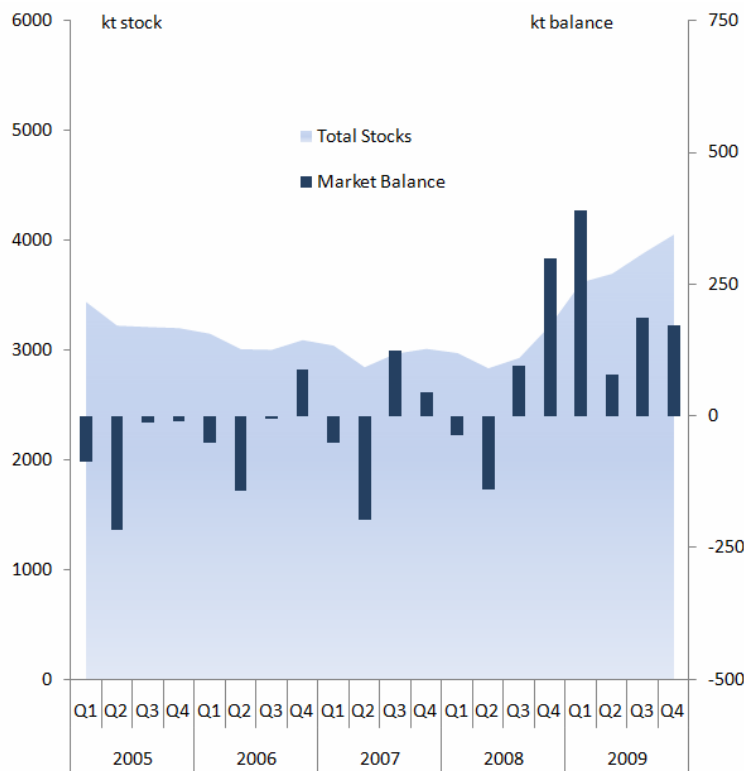
In Jan-09 we forecast a 2.2% drop in refined output in 2009. Our data shows that this is exactly what happened. But, the pattern over the year was different. A sharper than expected drop in output occurred in H1 and there was a sharper than expected rebound in H2



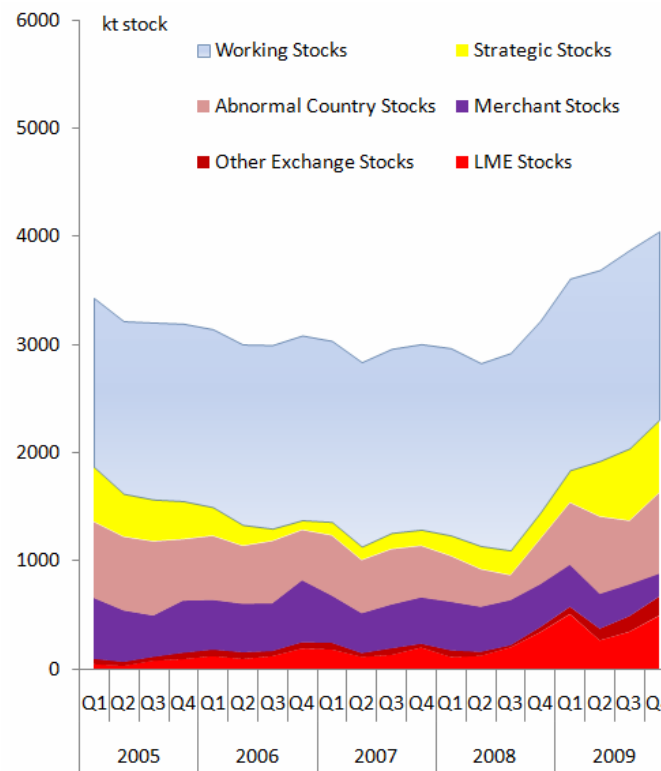
## 2009 in retrospect: *Market balance and stocks*

There was a growth of 1.2 Mt mid-2008 to end-2009

### Market Balance and Stock



### Destination of Stocks



While stocks have been growing, it hasn't always felt like it. The most visible stocks, on the exchanges, fell sharply in H1 2009. In contrast, in recent months, the surplus has been fully reflected in growing inventories on the exchanges.



## 2009 in retrospect: *Market balance and stocks*

### China mopped up all of the surplus

China Copper Consumption and Stock Change 2008-2009

	2008	2009	Change 08-09
<b>Supply Chain</b>			
<b>Semis Production</b>	<b>6,471</b>	<b>7,353</b>	<b>13.6%</b>
Scrap Imports	1,840	1,374	-25%
Domestic Scrap Generation	893	1,007	13%
Production of Secondary	1,275	1,145	-10%
Scrap Stock Change	65	-77	na
<b>Use of Scrap for Semis</b>	<b>1,393</b>	<b>1,313</b>	<b>-5.7%</b>
Refined Production	3,710	3,925	6%
Imports fof Refined	1,610	3,075	91%
Exports of Refined	104	70	-33%
Refined Stock Change	138	890	na
<b>Aparent Refined Cu Use</b>	<b>5,078</b>	<b>6,040</b>	<b>18.9%</b>
<b>Refined Stocks Change Detail</b>			
SRB Purchases (net)	75	400	na
Shanghai Stock Change	-8	77	na
Other Stock Changes	71	413	na
Producers	70	30	na
Consumers	51	30	na
Investors	-50	353	na
<b>Refined Stock Change</b>	<b>138</b>	<b>890</b>	<b>na</b>

We estimate the global market surplus in 2009 at 826 kt. The accumulation of stock in China alone was larger than this – at 890 kt. Thus China mopped up the global surplus

China's absorption of material other than for use was mostly in SRB and investor purchases, with a little going on to the Shanghai exchange and little into the supply chain

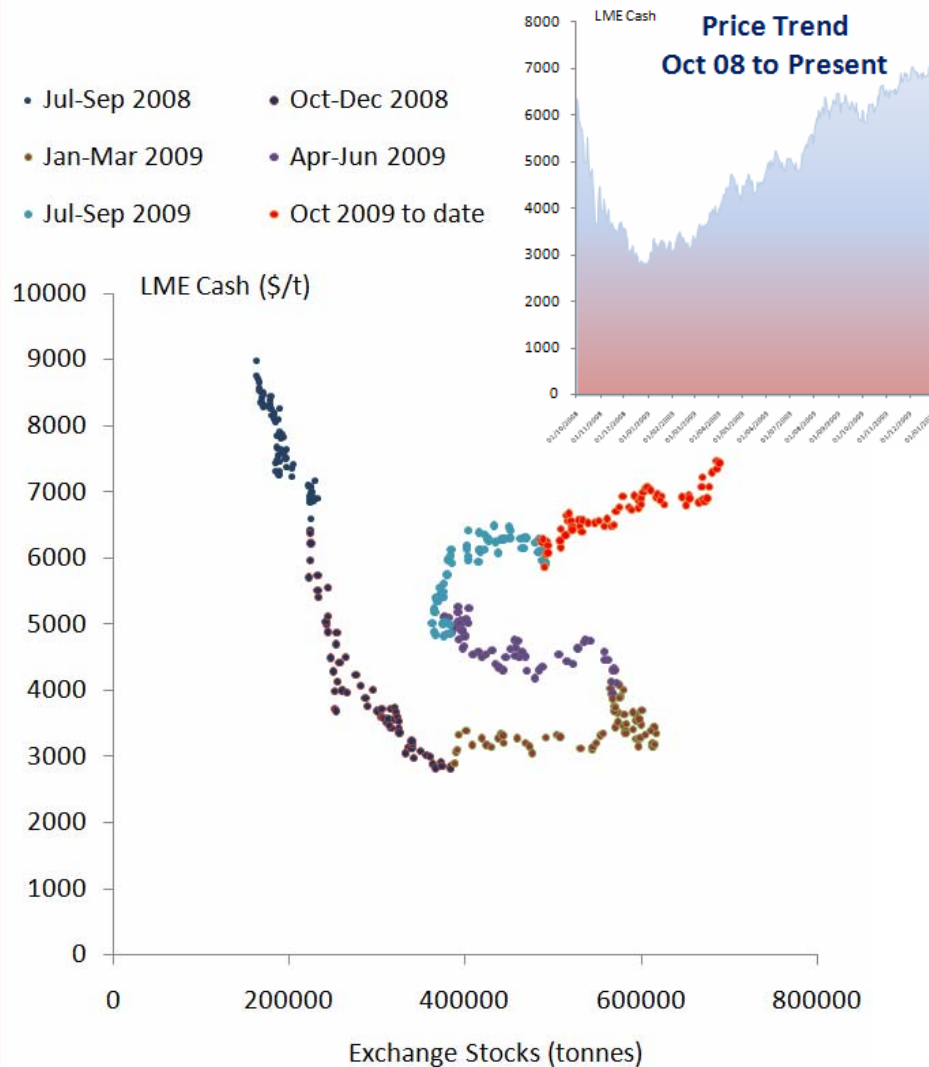
Actual copper use in China also cut the global surplus. While China's use of refined copper in 2009 rose by 0.96 Mt, that in the rest of the world fell by 1.73 Mt.

The net result was a huge rise in net imports of refined copper – of 1.5 Mt - between 2008 and 2009.



## 2009 in retrospect: *Copper price*

### Exchange stocks and prices – Not quite as expected



Prices saw a precipitous fall from October 2008, when economic sentiment really turned sour. As stocks rose, prices fell further until early in 2009.

Then, as stocks rose prices also rose, sharply so in March and early April.

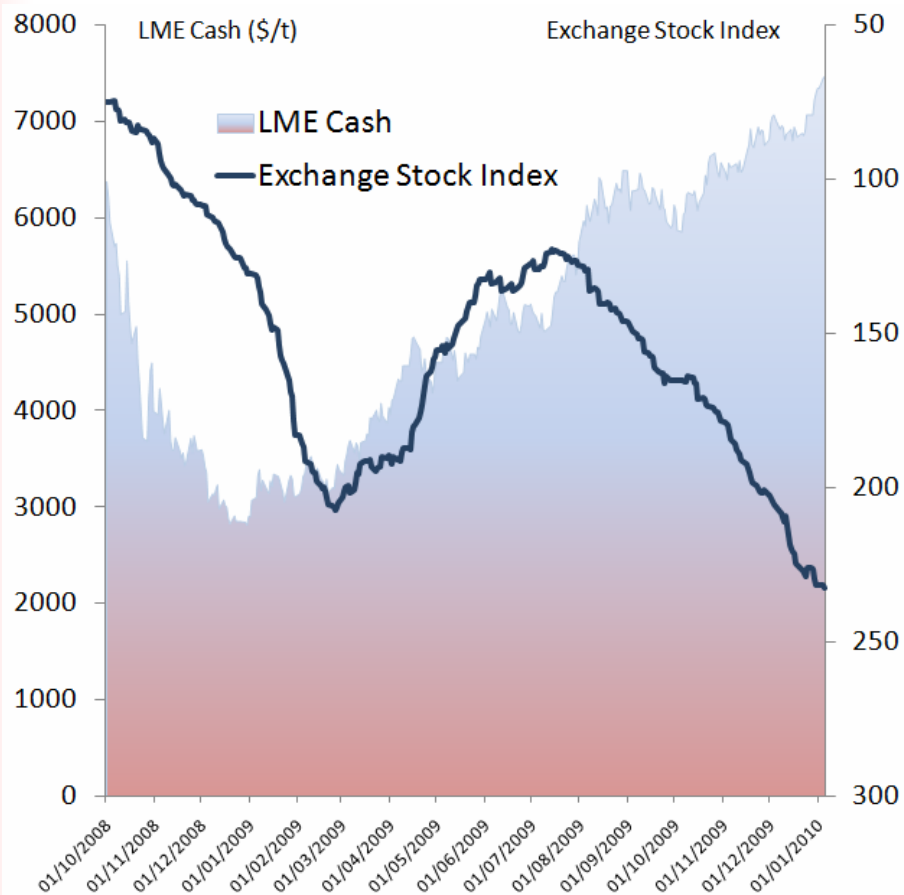
Until mid-year, we seemed to have regained a more normal stocks to price relationship – but at a high level of price in relation to stock.

In July and August we again appeared to go off track, with spiralling prices and slightly increasing exchange stocks.

From October onwards there has been a steady rise in prices and a steady rise in stocks – hardly what we were taught to expect.

## 2009 in retrospect: *Copper price*

### So what happened to the stock to price relationship?



Clearly, the traditional correlation between rising visible stocks and falling prices (and vice versa) did not work well in 2009. Has this relationship disappeared altogether?

In the first half of 2009 one could say that the inverse correlation was still in place. The difference was in the phasing, price seeming to predict stock change by up to 3 months.

From July, however, no relationship between price and exchange stocks is visible at all. Prices continued to rise at the same time as exchange stocks. Insofar as exchange stocks show the physical state of the market, physical realities appear to have had no influence on price at all.

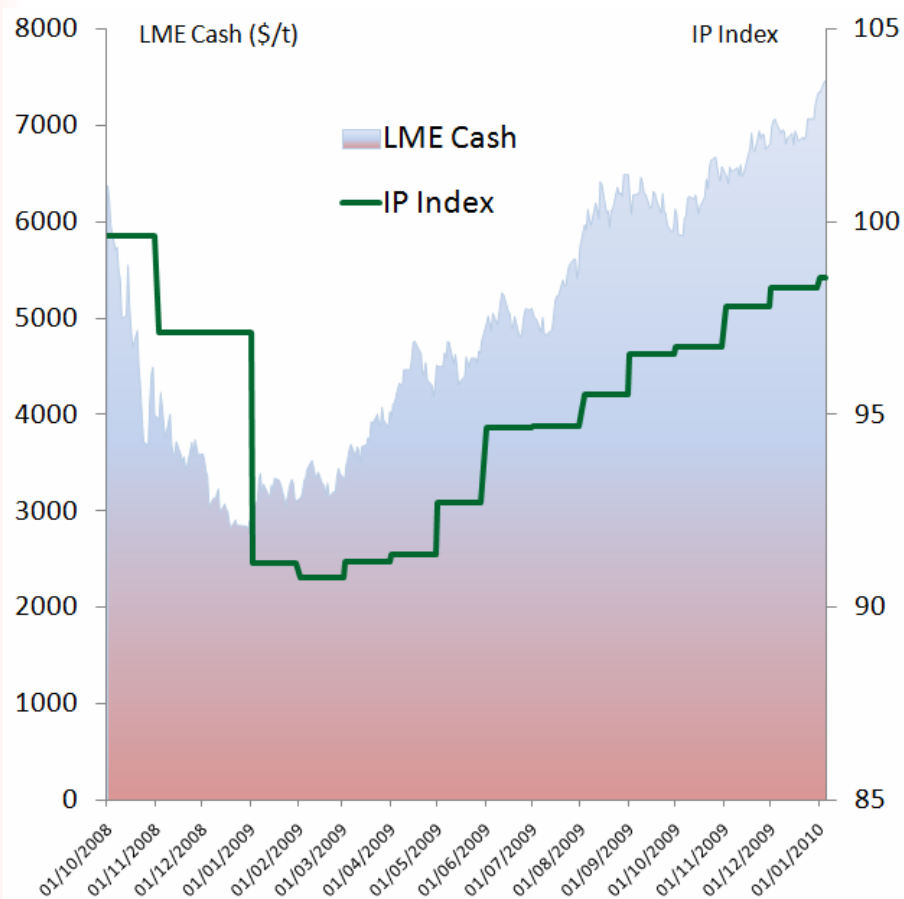
Clearly, we need to look elsewhere for the true determinants of price.

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## 2009 in retrospect: *Copper price*

The price trough mirrored that in IP



In Q4 2008, copper price and IP collapsed in tandem. Both were at or near their low point in February of 2009.

Between February and April, prices regained an upward path, while IP stayed more-or-less on the floor. To the extent that IP was a driver, price seems to have been anticipatory.

Since April 2009, both price and IP have been on an upward trajectory. But, prices have still risen much more than the tentative economic recovery would appear to justify.

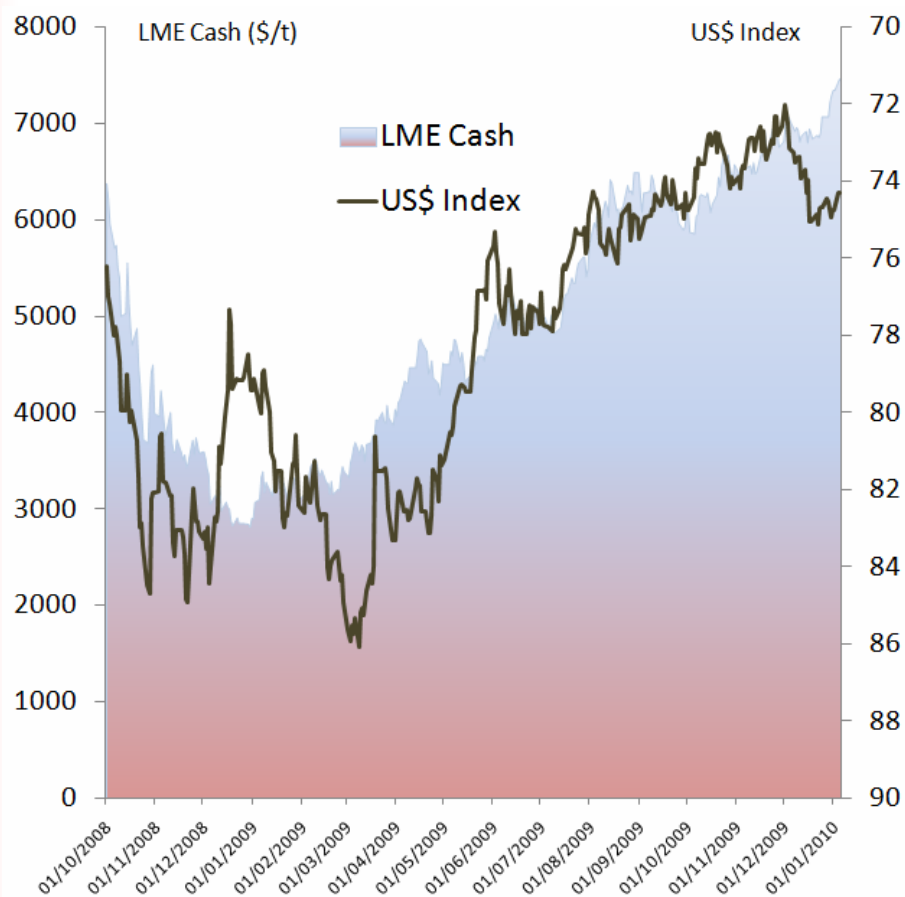
In absolute terms, prices are very high indeed given the continued low level of IP.

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## 2009 in retrospect: *Copper price*

As the US Dollar weakened, copper prices rose



While copper prices have risen sharply in Dollar terms, this is less true in many other currencies. Currency valuation clearly played a major part in the appreciation of copper (and other commodities) in US Dollar terms.

This is not a temporary phenomenon, the copper price and the US Dollar moved closely in inverse relationship throughout 2008 as well as in 2009.

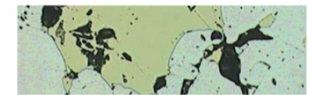
Although much has been said about the currency hedge value of base metals in recent months, however, the relationship is not a reliable one. Note the move in opposite directions end-October 2008 to mid-March 2009. And, more important, note the apparent breakdown in the currency tie in December 2009.

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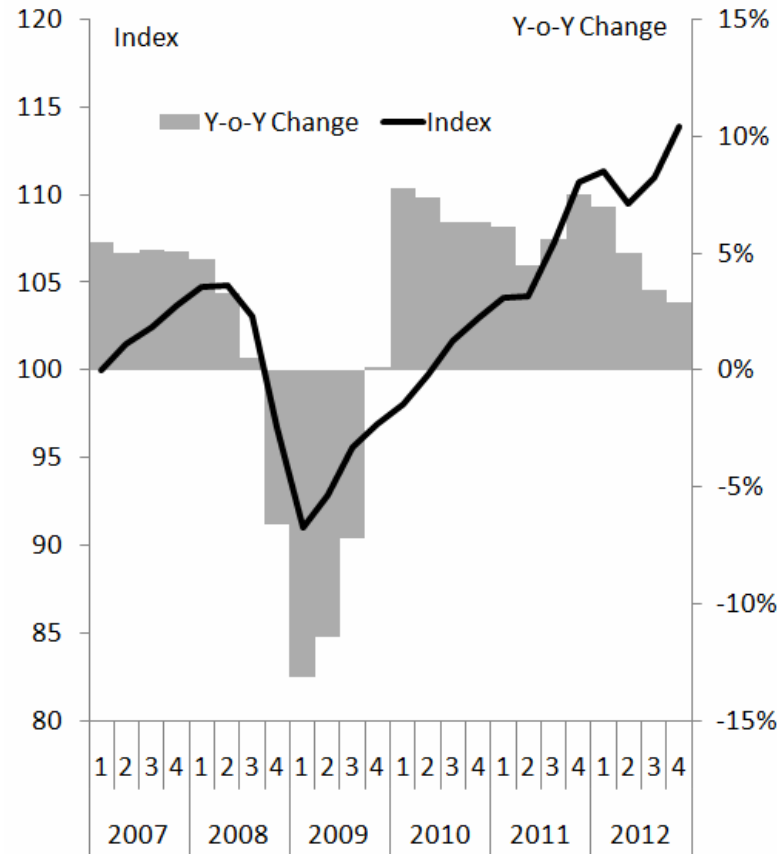
# Prospects for 2010 and Beyond

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# Prospects for 2010 and beyond: *Economic recovery*

## Industrial production - since April-09 on an upward path



### Country / Region Forecasts

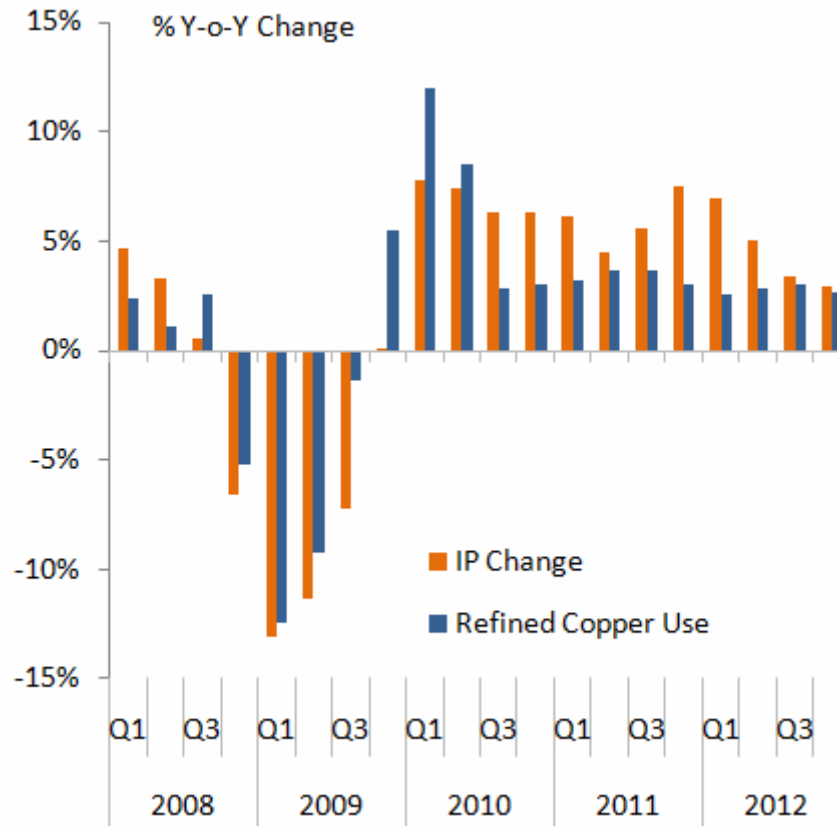
	2009	2010	2011	2012
North America	-9.0%	4.6%	3.6%	2.9%
South America	-7.0%	8.1%	5.0%	5.4%
Europe	-13.1%	6.1%	4.9%	2.8%
Japan	-21.9%	12.0%	8.5%	3.5%
China	7.7%	8.3%	8.8%	8.0%
Other Asia	-50.0%	7.9%	7.3%	5.8%
Others	-2.2%	4.5%	3.8%	4.2%
OECD	-12.4%	6.4%	4.8%	3.1%
Non-OECD	-10.0%	7.9%	7.5%	6.0%
World	-8.1%	7.0%	5.9%	4.3%

While in absolute terms, the economic situation is still dire, two good things can be said about it: 1) Bottom was reached March-April of 2009, 2) Growth rates over the next three years are set to be above normal.



## Prospects for 2010 and beyond: *Consumption*

As IP picks up so will consumption, but not by so much



Following a slight rise in refined copper use in 2008, 2009 was one of the worst years on record, with over 800 kt loss in refined copper use, despite lower scrap content.

Through the trough, refined copper use year-on-year performance was well ahead of IP – by 3.8% for 2009 overall. This gain in physical use of copper against the industrial backcloth is expected to continue as recovery gains momentum in H1 2010, driven largely by supply chain restocking.

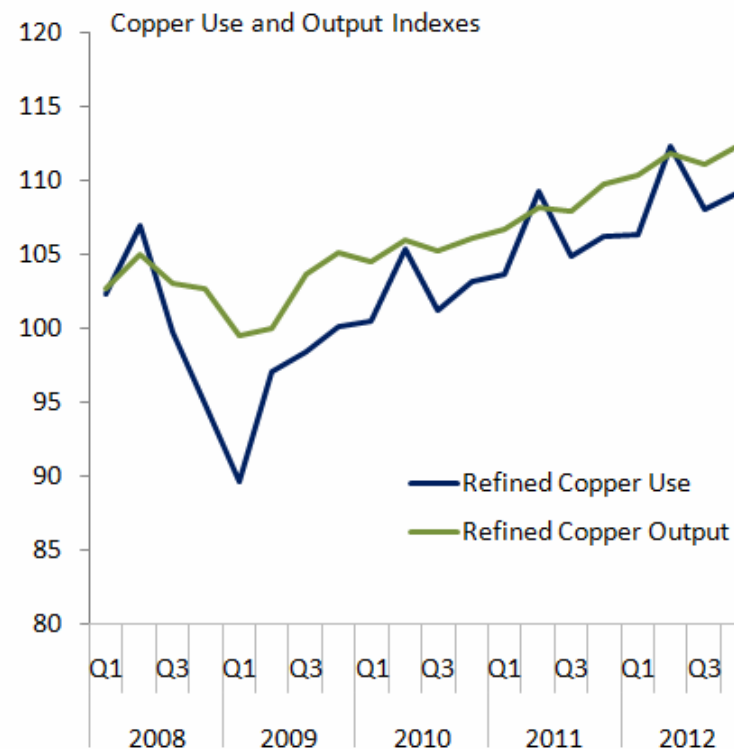
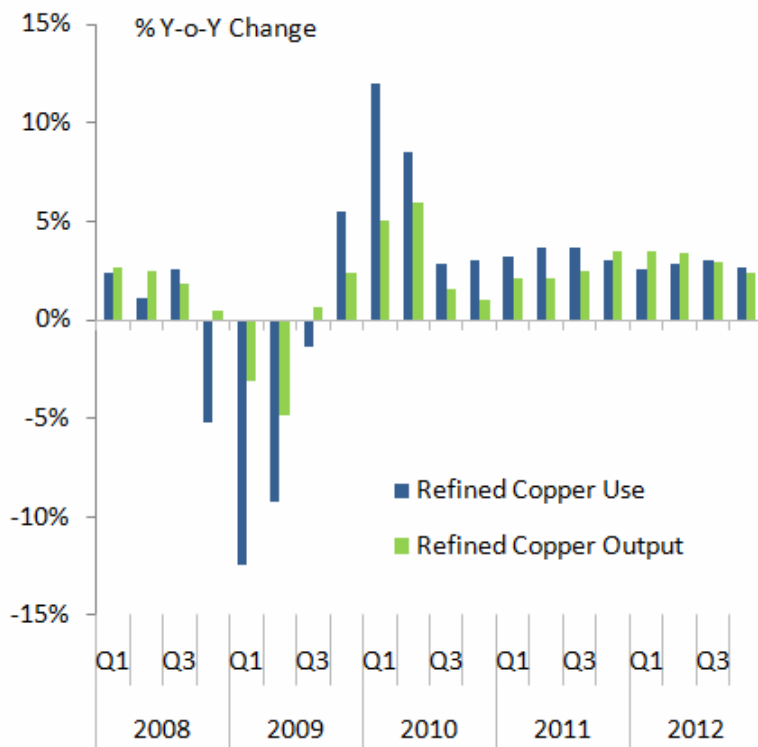
The gain in intensity of use is expected to be short lived if prices remain high. As prices rose from 2004 to 2008 copper's intensity of use fell on average by 1.8% p.a.

We forecast an average 1.5% p.a. loss in copper's intensity of use over the next 3 years.



## Prospects for 2010 and beyond: *Supply*

Supply response muted, but by mid-2011 it will be rising faster than consumption



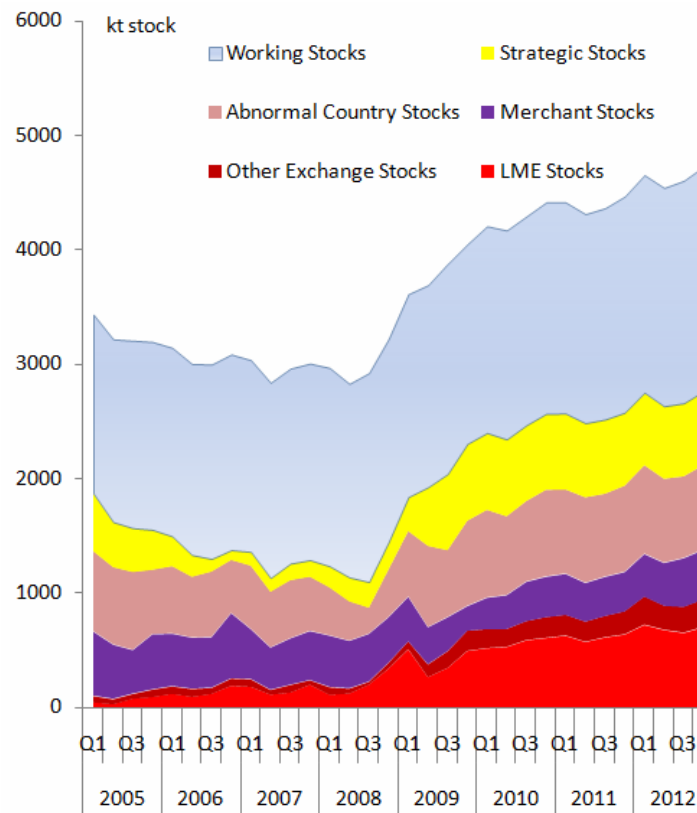
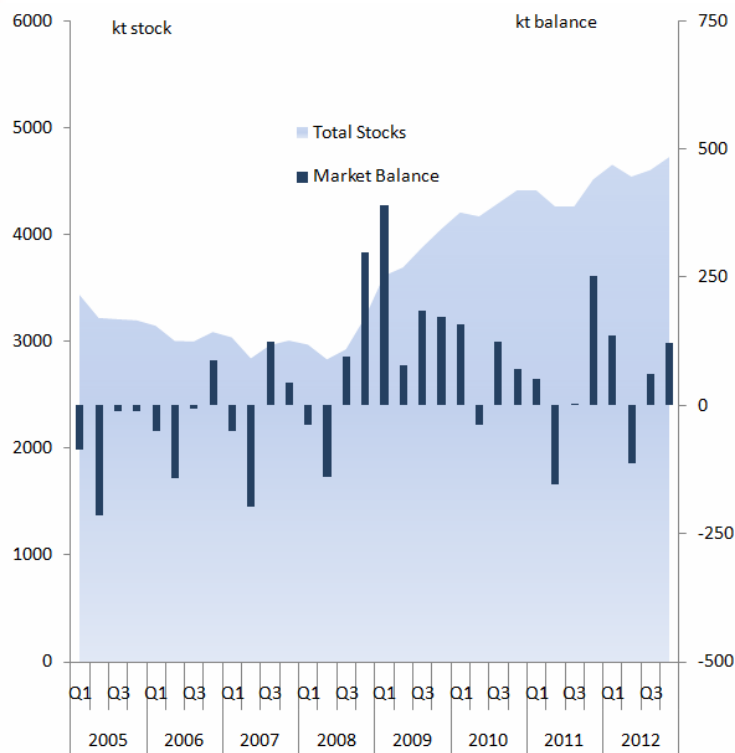
Refined copper supply was already showing a year-on-year gain by Q3 2012. While supplier discipline should keep investment at modest levels for some time yet, current mine projects together with the return of full scale production where cutbacks were made and of secondary output should ensure around 3% p.a. output expansion from 2010 onwards.



# Prospects for 2010 and beyond: *Market balance & stocks*

## Stock rise to continue through to at least 2012

Recovery in demand and limited supply response should allow the market to shift closer to balance. But, with high prices, demand recovery will be muted and supply quite buoyant, so the market is expected to remain in surplus until at least 2012.



Liquid stocks (coloured in reds), choppy during 2009, are expected to show a slow but distinct upward trend over the next three years.



## Prospects for 2010 and beyond: *Market balance & stocks*

### China negative in 2010: Low consumption, & stock release

#### China Copper Consumption and Stock Change 2009-2010

	2009	2010	<i>Change 09-10</i>
<b>Supply Chain</b>			
<b>Semis Production</b>	<b>7,353</b>	<b>7,630</b>	<b>3.8%</b>
Scrap Imports	1,374	1,730	26%
Domestic Scrap Generation	1,007	1,060	5%
Production of Secondary	1,145	1,310	14%
Scrap Stock Change	-77	0	na
<b>Use of Scrap for Semis</b>	<b>1,313</b>	<b>1,480</b>	<b>12.7%</b>
Refined Production	3,925	3,980	1%
Imports of Refined	3,075	1,970	-36%
Exports of Refined	70	50	-29%
Refined Stock Change	890	-250	na
<b>Aparent Refined Cu Use</b>	<b>6,040</b>	<b>6,150</b>	<b>1.8%</b>
<b>Refined Stocks Change Detail</b>			
SRB Purchases (net)	400	0	na
Shanghai Stock Change	77	0	na
Other Stock Changes	413	-250	na
Producers	30	30	na
Consumers	30	30	na
Investors	353	-310	na
<b>Refined Stock Change</b>	<b>890</b>	<b>-250</b>	<b>na</b>

As indicated in Slide 9, China was a hugely positive influence on the market in 2009, with high refined copper consumption growth in also a huge intake of material that had nothing to do with consumption.

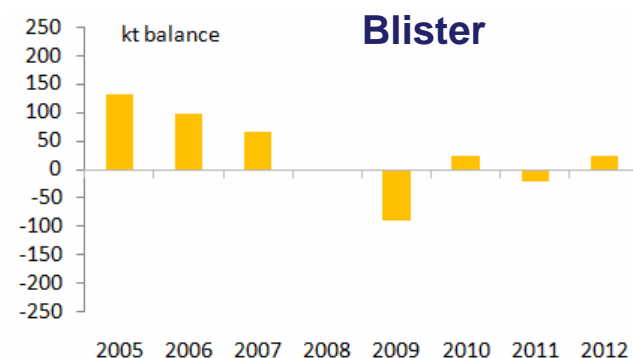
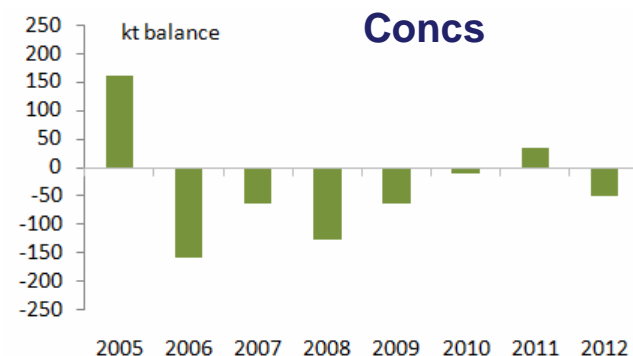
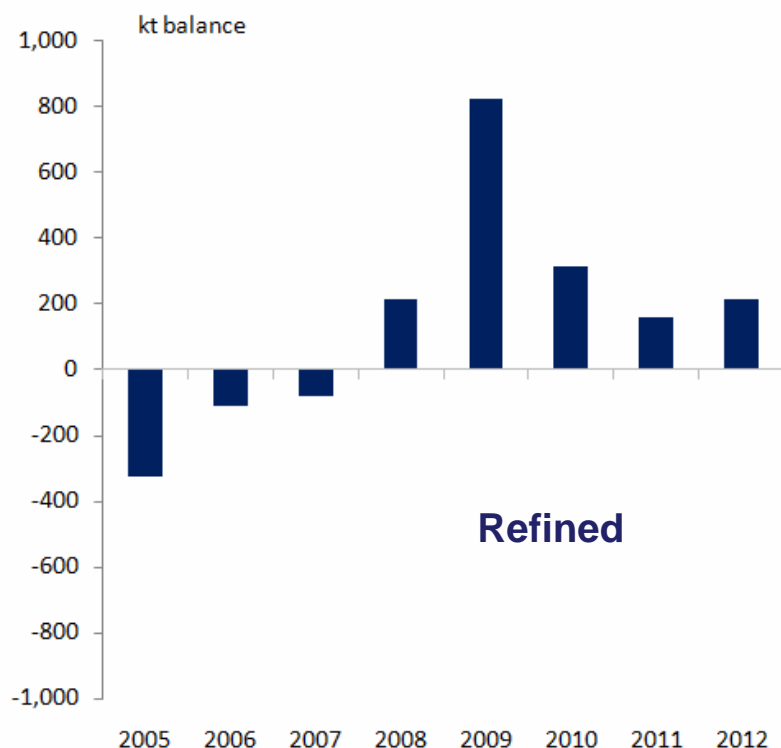
We expect to see the reverse side of the coin in 2010. Real growth in fabricated output is expected to be modest and, with higher direct melt scrap use, refined copper use even more so.

We also expect some of the material bought for investment in 2009 to be released in 2010.

The net effect will be a sharp reduction of imports of refined copper in 2010 (of 1.1 Mt). With the rest of the world unable to fully counterbalance this, 2010 is set to be another year of surplus.

## Prospects for 2010 and beyond: *The supply chain*

Blister and concentrates balances not in line with refined:  
Processing sector overcapacity to remain

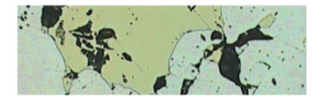
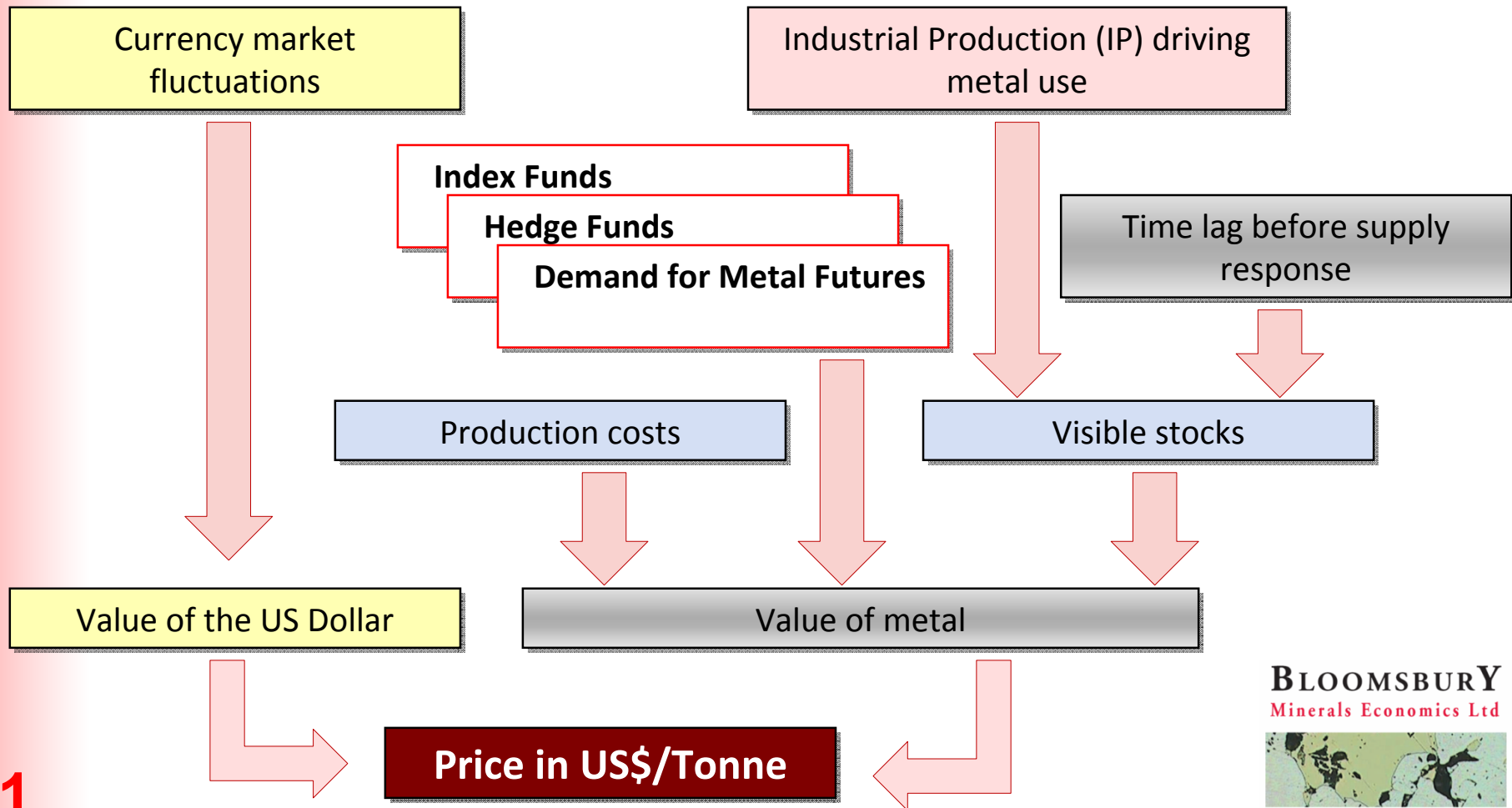


In 2009, mine output fell more sharply than primary smelter output. Already low capacity utilisation in the processing sector became lower, and TC/RCs plummeted. Although the return of secondary output and the loss of some non-commercial output will help, overcapacity in processing is structural. We expect to see low TC/RCs for some time to come.



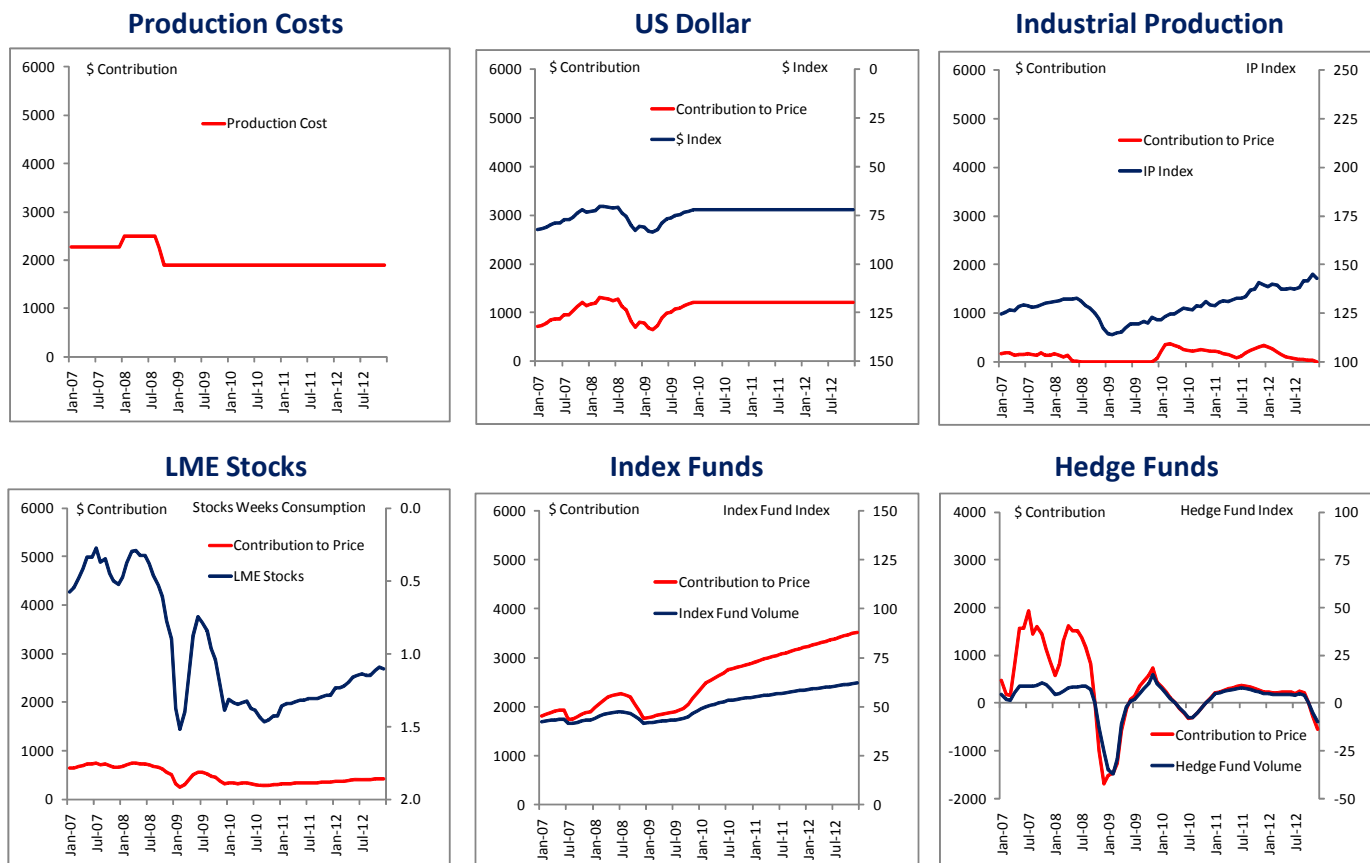
Prospects for 2010 and beyond: *Price drivers together*

The **BME price model** predicts price based on the measured impact of each of the price drivers



# Prospects for 2010 and beyond: *Price drivers together*

## Contribution of the price drivers: Note Fund influence

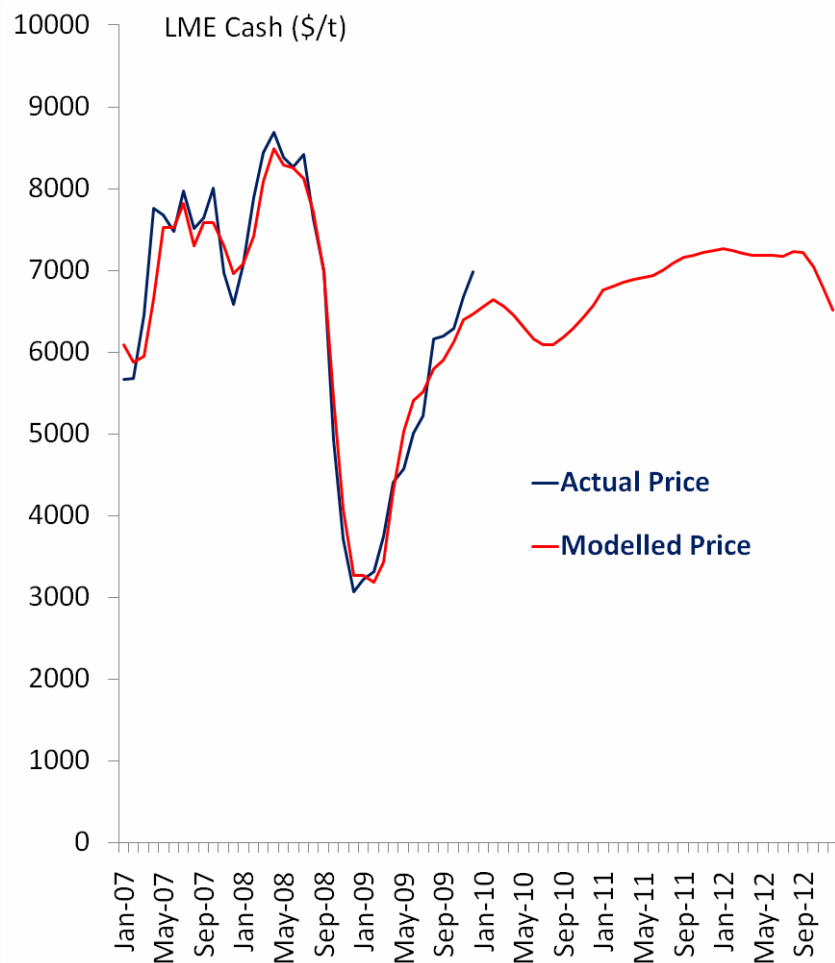


The contribution of the traditional drivers of price (production cost, stocks ratio, industrial production, value of the US Dollar) is substantial, if inconsistent. Now index and hedge funds also play a major role. In part their contribution reflects a view on the physical market – but only in part.



## Prospects for 2010 and beyond: *BME price forecasts*

### Upward price trajectory running out of steam



While both Index funds and Hedge funds have been a major positive influence on price through 2009, we believe that the more fickle Hedge funds will become a negative influence on price in coming months.

This will lead to a price dip to little over \$6,000/t, before a limited upward price trajectory is regained (driven mainly by long-only investment by the Index funds – possibly with some contribution from a continued weakening of the US Dollar).

The change in sentiment of the more market responsible funds is expected as a result of the growing gap between physical market realities and the copper price.

Longer term, it remains to be seen how far prices continue to defy gravity in a context of continued market surplus.

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# Implications Looking Forward

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## Implications looking forward: *End note*

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### Some observations

E

- Given the macroeconomic background, visible stocks and demand/supply balance, copper prices right now are very high indeed.
- Although each of these physical market variables is having an impact on price, the relationships are not that strong and traditional price drivers in no way explain the current absolute level of pricing.
- While the weakening US Dollar has been an evident driver of price, the net bias of the Funds towards long-only investment appears to be by far the greatest single determinant of price – especially looking forward.
- The change in the nature of price determination has important implications. The hedge funds can, and may soon, short the market, with a potential for a sharp price fall. While the Index funds work on a longer cycle, their rationale has little to do with the immediates of the copper market.
- The net result is not only that price moves are less predictable than they may have been in the past, prices will also be more volatile.
- Price is longer always a signal to invest in new capacity. Where there can be synchronous high prices, high stocks and too much capacity, investment decisions need to be taken with great care.

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For copper

- Conventional fundamental market analysis

For exchange traded metals

- Interactive fundamental/investment based price models

For anything that has an opening, close, high and low price

- Technical analysis expert systems working from intra-day to long-term (for individual markets and arbitrage)
- Sector rotation analysis
- Black box trading systems

For more information contact **Paul Dewison (research)**

or **Robert Goldstein (sales)**

or visit [www.bloomsburyminerals.com](http://www.bloomsburyminerals.com)



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